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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,067	12/11/2003	Pasi Tikka	P03,0501	9450

7590 04/05/2005

SCHIFF HARDIN & WAITE
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EXAMINER


SUMMONS, BARBARA

ART UNIT PAPER NUMBER

2817

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/734,067	TIKKA, PASI	
	Examiner	Art Unit	
	Barbara Summons	2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-9, 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 10 and 11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/19/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR § 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "ES" shown in Fig. 2a. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the Examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to under 37 CFR § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the filter having some of the "n resonators" being "series resonators" and some "parallel resonators" and wherein the "series resonators are capacitively decoupled from the parallel resonators and are at least partially capacitively decoupled from one another" as recited in claims 10 and 11, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). The objection to the drawings will not be held in abeyance (see also guidance in paragraph 1 above).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10 and 11 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Each of claims 10 and 11 recite that some of the n resonators are series resonators and some are parallel resonators (see lines 2-3) and recite "capacitively

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decoupled” and a “further acoustic mirror” (see lines 4-7). These limitations render the claims unclear for numerous reasons.

Firstly, since no drawing figure has been shown with both series and parallel resonators or showing what structure provides the resonators be “capacitively decoupled”, it cannot be determined what structure Applicant is attempting to claim even “in light of the specification”. Secondly, claim 1 recites that a number “N of resonators that are electrically connected to one another”, but subsequently claims 10 and 11 recite the series resonators are “capacitively decoupled” from the parallel resonators (capacitive coupling being a type of electrical connection) leading to confusion as to whether the series and parallel resonators are electrically connected or not. Finally, claim 1 recites that the “n resonators” are “arranged jointly and alongside one another on the acoustic mirror” (lines 6-8) that has a coupling layer (lines 2-3), but claims 10 and 11 subsequently recite that the part of the “n resonators” that are “series resonators” are “arranged on” either “separate further acoustic mirrors” or “on a further acoustic mirror”, thereby contradicting claim 1 where all of the n resonators are on a single acoustic mirror with a coupling layer. Therefore, it is totally unclear how the series and parallel resonators are arranged, even in light of the specification, which has no figure or discussion of the claim 10 and 11 recited arrangements.

Allowable Subject Matter

5. Claims 1-9, 12 and 13 are allowable over the prior art of record.
6. The following is a statement of reasons for the indication of allowable subject matter:

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The prior art of record does not disclose or fairly suggest a component operating with bulk acoustic waves having all of the recited features, and especially having "an acoustic mirror comprising an electrically conductive mirror layer that acts as a coupling layer" (claim 1, lines 2-3) and having "N" "electrically connected" resonators (line 5) with "n resonators, where $2 \leq n \leq N-1$ " being arranged "on the acoustic mirror" and coupled in the recited manner.

The prior art generally shows either the electrically conductive layers in acoustic mirrors being patterned so as to not act as coupling layers (see the reference to Ella cited by Applicant), or shows all of the resonators of a filter formed on an acoustic mirror (see references below), thus not meeting the " $2 \leq n \leq N-1$ " limitation.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Each of Milsom U.S. 6,509,814; Panasik U.S. 6,441,703; and Barber et al. U.S. 6,307,447 disclose all of the resonators of a bulk acoustic wave filter being formed on an acoustic mirror with a conductive layer that will inherently provide capacitive coupling between adjacent resonators, such coupling being considered "parasitic" as discussed in the reference to Ella (cited by Applicant).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bs
April 1, 2005

A handwritten signature in black ink that reads "Barbara Summons". The signature is fluid and cursive, with a long horizontal stroke extending from the end of the name.

BARBARA SUMMONS
PRIMARY EXAMINER